

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A membrane electrochemical generator ~~fed with gaseous reactants and~~, comprising:

a multiplicity of reaction cells and a multiplicity of cooling cells, wherein each of said cooling cells is interposed between [[said]] two reaction cells,
~~assembled in a filter press configuration,~~

~~wherein each of said reaction cells~~ comprises a metallic reticulated current collector, an active area, and [[being]] is delimited by two bipolar sheets and being
~~provided with metallic reticulated current collectors/distributors,~~

each of said cooling cells [[being]] comprises a reticulated conductive element and is delimited by two bipolar sheets and being
~~provided with a reticulated conductive element,~~

each of said bipolar sheets being formed by comprises a metallic central body having ~~dimensions slightly exceeding those of~~ a dimension larger than the active area of the reaction cells and ~~being integrated in a frame made of~~ a polymeric material,

~~said frame being provided with~~ comprises:

a first feed opening and a second feed opening ~~openings~~ for the passage of [[said]] gaseous reactants,

a first discharge opening and a second discharge opening ~~openings~~ for the ~~withdrawal of discharging reaction products, optionally mixed with exhausts and~~

~~openings for feeding and extracting a coolant, and said frame containing distributing and collecting channels for putting the openings in direct communication with the reaction cells and cooling cells, respectively~~

an opening for feeding a coolant into a cooling cell, and
a multiplicity of channels each having two ends, wherein one end opens to the active area of the reaction cell while the other end opens at one of the first feed opening, the second feed opening, the first discharge opening, and the second discharge opening.

2. (Previously Presented) A generator of claim 1, wherein said polymeric material is of the thermoplastic type.

3. (Previously Presented) A generator of claim 1, wherein said polymeric material is of the thermosetting type.

4. (Previously Presented) A generator of claim 1 wherein said frame is integrated with said central metallic body by moulding or gluing.

5. (Currently Amended) A generator of claim 4 wherein
~~said metallic central body is previously provided with leachable elements having the shape of said distributing and collecting channels and [[that]] said leachable elements are dissolved with a reactant after said moulding.~~

said channels are formed using a method comprising steps of applying leachable elements in the shape of the channels on the metallic central body, molding a polymeric frame on the metallic central body, and dissolving the leachable element in a chemical solution.

6. (Currently Amended) A generator of claim 5 wherein said leachable elements are made of aluminum and said ~~reactant~~ chemical solution is caustic soda.

7. (Currently Amended) A generator of claim 4 wherein said metallic central body is previously provided with preformed elements having the shape of said ~~distributing and collecting~~ channels.

8. (Previously Presented) A generator of claim 7 wherein said preformed elements are made of metal or plastics.

9. (Previously Presented) A generator of claim 8 wherein said metal is stainless steel.

10. (Currently Amended) A generator of claim 1 wherein said frame ~~integrated with said metallic central body~~ consists of two preformed components containing said ~~distributing and collecting~~ channels.

11. (Previously Presented) A generator of claim 10 wherein each of said two preformed components constitutes a face of said frame.

12. (Previously Presented) A generator of claim 10 wherein said two components are assembled with each other and with said metallic central body by thermal bonding or gluing with an adhesive.

13. (Currently Amended) A generator of claim 4 wherein said metallic central body has a micro-rough ~~and/or~~ and chemically reactive surface obtained by sandblasting ~~and/or~~ or chemical attack or both.

14. (Currently Amended) A generator of claim 4 wherein said metallic central body ~~is provided with~~ comprises openings in the peripheral zone ~~suited to favor the adhesion of said moulded frame~~ covered by the frame and having materials in the frame penetrating the openings.

15. (Currently Amended) A generator of claim 1 wherein in a filter-press configuration, ~~the coupling between said openings frames determines the formation of longitudinal feed manifolds, the coupling between said discharge openings determines the formation of longitudinal discharge manifolds, the coupling between said openings for feeding and extracting a coolant determines the formation of manifolds for circulating said coolant.~~

said frames on bipolar sheets are adjacent to each other so that corresponding feed openings in each frame are aligned to form longitudinal feed manifolds,

corresponding discharge openings in each frame are aligned to form longitudinal discharge manifolds.

16. (Currently Amended) A generator of claim 1 wherein said frame further comprises a multiplicity of holes ~~for housing~~ where tie-rods ~~by means of which the tightening of~~ for tightening said electrochemical generator is ~~accomplished~~ pass through.

17. (Currently Amended) A generator of claim 1 wherein said metallic central body comprises a multiplicity of first calibrated holes for the passage of said gaseous reactants and a multiplicity of second calibrated holes for the discharge of reaction products ~~and optionally exhausts.~~

18. (Currently Amended) A generator of claim 17 wherein said first calibrated holes are ~~mutually aligned~~ with ~~and positioned in correspondence of said distributing channels of said frame and that said second calibrated holes~~ are ~~mutually aligned and positioned in correspondence of~~ with said collecting channels of said frame.

19. (Currently Amended) A generator of claim 17 wherein said first and second calibrated holes are ~~spaced by~~ placed about 1 mm from the inner edge of said frame.

20. (Previously Presented) A generator of claim 17 wherein said first calibrated holes have a diameter between 0.1 and 5 mm.

21. (Currently Amended) A generator of claim 1 wherein said metallic central body comprises a multiplicity of ~~aligned~~ calibrated holes for injecting water into said reaction cells, said holes ~~being spaced by~~ are placed about 1 mm from the inner edge of said frame.

22. (Currently Amended) A generator of claim 21 wherein said aligned calibrated holes are ~~positioned in correspondence of additional~~ aligned with water distributing channels.

23. (Currently Amended) A generator of claim 1 wherein said central body comprises a multiplicity of ~~aligned~~ calibrated holes for distributing the gaseous reactants, a multiplicity of ~~aligned~~ calibrated holes for injecting water and a multiplicity of ~~aligned~~ calibrated holes for ~~withdrawing~~ discharging the products, the exhausts and the residual injected water, each of said calibrated holes positioned in correspondence ~~[[of]]~~ to one of said distributing or of said collecting channels.

24. (Currently Amended) A generator of claim 23 wherein said ~~aligned~~ calibrated holes for distributing the gaseous reactants and said ~~aligned~~ calibrated holes for ~~withdrawing~~ discharging the products, the exhausts and the residual injected water are ~~spaced by~~ placed about 1 mm from the edges of said frame.

25. (New) A membrane electrochemical generator, comprising:

a multiplicity of reaction cells, wherein each of said reaction cells comprises a metallic reticulated current collector, an active area, and is delimited by two bipolar sheets,

each of said bipolar sheets comprises a metallic central body having a dimension larger than the active area of the reaction cells and a frame made of a polymeric material,

said frame comprises:

a first feed opening and a second feed opening for the passage of gaseous reactants, at least one of the first and the second feed openings also provide a passage for the cooling water to enter the reaction cell,

a first discharge opening and a second discharge opening for discharging reaction products, at least one of the first and the second discharge opening also provide a passage for the cooling water to exit the reaction cell,

a multiplicity of channels each having two ends, wherein one end opens to the active area of the reaction cell while the other end opens at one of the first feed opening, the second feed opening, the first discharge opening, and the second discharge opening.